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Linking Possible Selves and Behavior: Do Domain-Specific Hopes and Fears Translate Into Daily Activities in Very Old Age?

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We used time-sampling information from a subsample of the Berlin Aging Study (N = 83; M = 81.1 years) to investigate the link between possible selves in three domains (health, everyday cognition, and social relations) and performance of daily activities. In the domains of health and social relations, hoped-for selves were associated with higher probabilities of performing daily activities in those domains. There were no associations in the cognitive domain or between feared selves and activities. Individuals who engaged in hope-related activities reported concurrent higher positive affect and subsequently had a higher probability of survival over a 10-year period. These findings speak to important associations between beliefs about possible selves and activities in advanced old age and the value of considering associations between microlevel and macrolevel indicators of successful aging.

POSSIBLE selves (Markus & Nurius, 1986) have attracted much interest in research on the processes involved in adaptation to age-related change across the life span (Dunkel & Kerpelman, 2006; Hooker & McAdams, 2003; Kerpelman & Pittman, 2001; Smith & Freund, 2002; Whaley & Shrider, 2005). Possible selves capture the dynamic and goal-oriented aspects of personality and have been defined as personalized hoped-for and feared images of the self in the future that direct behavior over time (Cotrell & Hooker, 2005; Markus & Nurius, 1986). Studies on possible selves have shown that the contents of possible selves mirror age-related themes of life and that, in later adulthood, health, cognitive functioning, and social relationships are among the predominant themes (Cross & Markus, 1991; Frazier, Cotrell, & Hooker, 2003; Smith & Freund, 2002). In this study we examine how possible selves in three salient life domains (health, cognition, and social relationships) translate into daily activities in old age. To do so, we use data from participants of the Berlin Aging Study (BASE; P. B. Baltes & Mayer, 1999) who additionally participated in a time-sampling study (Klumb & Baltes, 1999a).

Theory suggests that possible selves serve motivational and evaluative functions. First, possible selves act as motivational incentives by defining what is to be approached (hoped-for selves) and what is to be avoided (feared selves; Cotrell & Hooker, 2005; Cross & Markus, 1991; Markus & Nurius, 1986). Specifically, having an image of what is possible in the future allows one to mentally simulate future scenarios that facilitate decisions in favor of or against specific actions and provide clues about when to persist and when to withdraw. Representations of hoped-for possible selves involve goals as well as scenarios about the means and strategies to achieve them and thereby organize and energize the adoption of behaviors (Cross & Markus, 1994; Hooker, 1992; Hooker & Kaus, 1992; Markus & Ruvolo, 1989; Whaley, 2003). For example, wanting to be a good grandparent might be a possible self that motivates an older adult to think about ways of participating in the lives of grandchildren. This simulation may lead to decisions to engage in relevant activities (e.g., babysitting) and fuel long hours of continued patience with energetic grandchildren. Feared possible selves, in contrast, can disorganize behavior and cause inaction by providing the individual with a vivid undesirable image without necessarily specifying means and strategies of how to avoid it (Hooker, 1992; Markus & Ruvolo, 1989; Oyserman & Markus, 1990). Thus, we expect that possible selves and, in particular, hoped-for images in the domains of health, cognition, and social relationships set the stage for daily activities in the respective domain.

Researchers have investigated possible selves by using many different methods (see Dunkel & Kerpelman, 2006 for an overview). Using time-sampling methodologies, in the present study we complement past findings by investigating whether previously observed between-person relationships regarding possible selves and activities replicate at the within-person level in an individual's own environment. In addition, the respective online assessments of participants' daily activities reduce the effects of memory biases in retrospective reports and incorporate context effects as part of the design (Bolger, Davis, & Rafaeli, 2003; Schwarz, 1999). Given our focus on very old age, this seems to be particularly important.

In an attempt to examine the evaluative functions of possible selves, we also consider short-term and long-term outcomes. Discrepancy-reducing theories of affect (e.g. Carver, Lawrence, & Scheier, 1999), for example, propose that engaging in activities that are instrumental in either minimizing the distance between actual and desired situations or maximizing the distance from a feared scenario contributes to positive affect. We therefore expect that, at the intraindividual level, performance of activities in possible self-relevant domains is

associated with higher positive affect than is performance of activities in other domains. In addition to such subjective indicators of successful aging, performance of possible self-related activities might also relate to objective long-term outcomes such as health and survival (Glass, Mendes de Leon, Marottoli, & Berkman, 1999).

In summary, in this study we examine associations between possible selves and daily activities in very old age and how these relate to subjective and objective indicators of successful aging. To do so, we draw on data independently collected in two subprojects of BASE. One subproject was on the self in old age (Smith & Baltes, 1999; Smith & Freund, 2002), which collected data from all BASE participants; the other was on everyday competence, and it collected time-use information from a subsample of BASE participants (M. M. Baltes, Maas, Wilms, Borchelt, & Little, 1999; Klumb & Baltes, 1999b). In our study we reorganize and combine these two data sets.

We pursue two strategies to link possible selves and daily activities. Analogous to previous studies, we first consider possible selves in the domains of health, cognition, and social relations as individual characteristics in order to examine differences in the relative amount of possible-self-related daily activities. In a second step, we extend this between-person perspective to the within-person level. Specifically, utilizing multilevel modeling techniques, we examine whether health, cognitive, and social possible selves are associated with the probability of performing domain-specific activities in daily life. Our analyses also account for potential age and gender differences in health, cognitive, and social activities (Glass et al., 1999; Maier & Klumb, 2005).

Our second major objective is to examine whether the performance of possible-self-related activities is associated with a subjective and an objective indicator of successful aging, namely concurrent positive affect and subsequent survival. Specifically, we conducted within-person analyses to determine whether possible-self-related activities are associated with increased positive affect as compared with possible self-unrelated activities. In addition, we explore whether setting possible selves and engaging in possible self-related activities is associated with higher probabilities of survival over a 10-year poststudy period.

Methods

Participants and Procedure

The sample comprised 34 women and 49 men who volunteered to participate in an additional time-sampling study after having completed the third measurement wave of the BASE. Comprehensive information about assessment procedures and samples are published elsewhere in P. B. Baltes and Mayer (1999), Smith and colleagues (2002), and Klumb and Baltes (1999a). Participants were on average 81.1 years old (range = 72–97; $SD = 5.8$); 47% were widowed; and 53% lived alone. Selectivity analyses showed that, as to be expected for a volunteer subsample, these participants were a positive selection from the larger BASE sample, especially in terms of cognitive functioning ($SD = 1.2$), vision ($SD = 1.0$), and hearing ($SD = 0.8$; see Klumb & Baltes, 1999b).

Possible selves (Markus & Nurius, 1986) were elicited as part of an individual face-to-face interview during the third measurement wave of BASE (Smith & Freund, 2002). At the end of this wave, individuals were asked to participate in an additional study that was not part of the general BASE protocol. Between 13 and 73 days ($M = 34$ days) later, a research assistant contacted each volunteer at home and explained the study devices and materials for the time-sampling phase. During the following consecutive 6 days, participants were prompted by portable beepers to complete paper diaries on five randomly chosen time points per day. Each paper diary included affect ratings and open-ended activity reports. A research assistant collected participants' diaries at the end of the time-sampling phase. We set the minimum distance between two consecutive signals to 15 min. Two signals were on average 150 min apart. We adjusted signals to each participant's daily routine to avoid intrusiveness. Hence, individual windows of possible signals ranged from average wake-up time to average falling-asleep time as indicated by each participant. In addition, the research assistant instructed participants to keep the beepers out of hearing distance during naps. Of the 30 possible diary forms (5 occasions × 6 days), 87% were returned on average (Klumb & Baltes, 1999a).

Measures

Possible selves.—We assessed possible selves (Markus & Nurius, 1986) by asking participants to report two hopes and two fears regarding their future (Smith & Freund, 2002). A research assistant read the instruction aloud and tape recorded and transcribed answers verbatim. The coding followed a scheme developed by Freund and Smith (1999) that specified 20 different content categories. Interrater agreement was satisfactory ($\kappa = 0.89$ for hopes; $\kappa = 0.88$ for fears). For the present study, we aggregated data into separate scores for presence of hopes and presence of fears in three life domains: health and functional capacity (illness, mobility, and sensory functioning), everyday cognition (memory, home management, and daily routines), and social relations (contacts with family and friends, church activities).

Daily activities.—We categorized open-ended activity reports from the time-sampling phase into 59 categories by using a coding scheme by Klumb and Baltes (1999b). Interrater agreement was satisfactory to high ($\kappa = 0.65$–1.00). Of the 2,490 attainable data points (5 occasions × 6 days × 83 participants), 313 data points were missing (12.6%). We grouped activity reports into three content domains: health and physical activities, everyday cognitive activities, and social activities. Health and physical activities consisted of seeking medical treatment or performing health-related self-treatment; engaging in sports, gardening, or heavy household chores; and taking a walk or excursion and engaging in active locomotion. Everyday cognitive activities consisted of crossword puzzling, paying bills, and engaging in paper work or postal matters; engaging in cultural, education, or creative activities; reading newspapers, magazines, or other literature; writing; playing; watching news, political and cultural broadcasts, and information broadcasts; performing paid work; and thinking. Social activities consisted of visiting, talking with someone on the phone or in person, and engaging in social activities; eating out; taking part in religious or political activities; caring for

Table 1. Discriptives for Hopes, Fears and Daily Activities

Frequency or Percentage	Health	Everyday Cognition	Social Relations
Frequencies			
Hopes reported	45 (54)	35 (42)	34 (41)
Fears reported	23 (28)	11 (13)	44 (53)
Daily activities	65 (78)	80 (96)	62 (75)
% Possible-self-related activities			
Hopes reported	**11.5 (1.5)**	18.3 (1.7)	**8.4 (1.3)**
No hopes reported	**7.1 (1.1)**	17.0 (1.6)	**5.5 (0.8)**
Fears reported	10.7 (1.9)	17.2 (2.9)	**8.4 (1.0)**
No fears reported	9.0 (1.1)	17.6 (1.3)	**4.8 (0.9)**

Notes: $N = 83$; the three salient life domains are shown separately. In parentheses are percentages (for frequencies) and *SD*s (for percentages). Within rows, cells in boldface type significantly differ at or below $p < .05$.

a pet; and providing help to family members or to others. A considerable number of participants pursued at least one activity in these three domains (see Table 1). Of the total amount of daily activities reported, 10% fell into the domain of health and functional capacity, 18% into everyday cognition, and 7% into social relations.

Indicators of successful aging.—To assess concurrent positive affect, we selected four adjectives: interested, active, happy, and relaxed (Moss & Lawton, 1982; Watson, Clark, & Tellegen, 1988). At each time point, participants used a 5-point rating scale to indicate their current affective state. We computed the positive affect score by aggregating across the four adjectives (overall $M = 2.73$, $SD = 0.75$, $\alpha = 0.90$). We obtained information about mortality status and date of death from the City Registry 10 years after the time-sampling phase (June, 2005). Mortality status was missing for 6 of the 83 participants because they had moved out of the Berlin area. We excluded them from the mortality analyses. Overall, 43 (56%) participants were deceased, and 34 were still alive.

Statistical Procedure

To examine how domain-specific possible selves were associated with daily activities, we used hierarchical linear modeling (HLM; Raudenbush, Bryk, Cheong, & Congdon, 2000). HLM allows the consideration of hierarchically nested data structures in that the repeated (within-person) assessment of everyday activities is analyzed at Level 1 simultaneously with modeling individual difference (between-person) characteristics at Level 2. We coded the performance of daily activities as a dichotomous dependent variable (yes = 1, no = 0) and estimated nonlinear multilevel Bernoulli models by using a binomial error distribution and the Laplace approximation in HLM (Raudenbush & Bryk, 2002). Accordingly, Level 1 represents the log odds of performing activities in a given domain (β_{0j}) for each individual. In models with dichotomous outcomes, the residual variance is already determined by the predicted value; therefore, we did not estimate residual variances (Snijders & Bosker, 1999).

At Level 2, the β_{0j} parameter becomes the outcome variable. We modeled between-person differences in the probability of activities as a function of an intercept (γ_{00}), whether one reported hopes or fears in this particular domain (γ_{01}), age (γ_{02}), gender (γ_{03}), and a residual component (u_{0j}): $\beta_{0j} = \gamma_{00} + \gamma_{01}$ (hopes/fears) + γ_{02} (age) + γ_{03} (gender) + u_{0j}. We used restricted maximum-likelihood procedures in HLM to examine whether engaging in possible self-related activities was associated with concurrent positive affect. That is, we modeled Level 1 positive affect (s) for a given person (i) at a given occasion (j) as a function of a person's mean level of positive affect during time in the study (β_{0j}), whether the activity reported was in accord with ones hopes or fears (β_{1j}), and a random within-person residual (r_{ij}): Positive affect $s_{ij} = \beta_{0j} + \beta_{1j}$ (hope/fear-related activities) + r_{ii}. At Level 2, we modeled a person's mean level of positive affect (β_{0j}) as a function of the average level across all participants (γ_{00}), reports of hopes or fears in the domains of health (γ_{01}), everyday cognition (γ_{02}), social relations (γ_{03}), age (γ_{04}), gender (γ_{05}), and a random effect (u_{0i}): $\beta_{0i} = \gamma_{00} + \gamma_{01}$ (hopes/fears: health) + γ_{02} (hopes/fears: cognition) + γ_{03} (hopes/fears: social relations) + γ_{04} (age) + γ_{05} (gender) + u_{0i}. At Level 2, we modeled a person's mean Level 1 slopes (β_{1i}) as a function of the average slope across all participants (γ_{10}) plus a random effect (u_{1i}).

Results

Results are reported in two sections. First, we examine whether hopes or fears in the domains of health, everyday cognition, and social relations were associated with adopting domain-specific daily activities. Next, we report analyses investigating whether the performance of possible self-related activities was associated with outcomes of successful aging, namely positive affect and survival.

Domain-Specific Hopes and Fears and Daily Activities

Descriptive information about the number of individuals who mentioned hoped-for and feared possible selves in the three domains is given in Table 1. In the health domain, for example, 45 participants (54%) reported hopes and 23 participants (28%) reported fears. With the exception of fears in the cognitive domain, a sizeable portion of participants reported hopes and fears across the three domains. More than three fourths of the participants performed at minimum one activity in each of the three domains (e.g., $n = 65$ of $n = 83$ reported health-related activities).

At the aggregate between-person level, we conducted univariate analyses of variance to compare the relative number of activities in a given domain for participants who reported hopes or fears with those who did not (see Table 1). Participants who reported hopes in the domains of health, $F(1, 81) = 5.2$, $p < .05$, and social relations, $F(1, 81) = 4.1$, $p < .05$, performed more activities in these domains relative to other activities. We found no association between hopes and activities in everyday cognition, $F(1, 81) = 0.3$, $p > .10$. In addition, fears in the social domain were related to relatively more social activities, $F(1, 81) = 6.7$, $p < .05$, whereas we found no associations for health, $F(1, 81) = 0.6$, $p > .10$, and everyday cognition, $F(1, 81) = 0.0$, $p > .10$. In sum, comparing individuals who reported hopes or fears, respectively, in a given domain with those who did not revealed initial evidence that possible selves might relate to a stronger performance of activities, particularly for the domains of health and social relations.

Table 2. HLMs Predicting Daily Activities from Possible Selves, Age, and Gender

Effect (*SE*)	Domain-Specific Activities		
	Health	Everyday Cognition	Social Relations
Fixed effects estimates			
Intercept, β_{00}	−2.34 (0.17)	−1.81 (0.14)	−2.90 (0.18)
t (77)	−13.88***	−12.61***	−16.31***
Age, β_{01}	−0.01 (0.02)	0.02 (0.02)	−0.03 (0.02)
t (77)	−0.37	1.22	−1.46
Gender, β_{02}	−0.30 (0.24)	−0.22 (0.19)	0.56 (0.20)
t (77)	−1.25	−1.13	2.83**
Hopes reported, β_{03}	0.50 (0.23)	0.24 (0.18)	0.39 (0.20)
t (77)	2.16*	1.31	1.97*
Random effects estimates			
Variance of intercept	0.55 (0.27)***	0.26 (0.14)***	0.10 (0.13)
Deviance reduction (Δ *df*)	3.83 (1)*	1.65 (1)	3.60 (1)

Notes: HLMs = hierarchical linear models; the predictions are made by the use of Laplace estimation (hierarchical linear modeling). For gender, men = 0, women = 1; $N = 83$. There were 2,177 observations. For reasons of model identification, the residual variance in estimating dichotomous dependent variables at Level 1 was set to unity. Deviance reduction refers to adding the Level 2 predictor hopes reported (1; no hopes reported = 0) to the baseline model that included age and gender as Level 2 predictors. *SE* = standard error.

*$p < .05$, **$p < .01$, ***$p < .001$.

Table 3. HLMs Predicting Mood From the Possible-Self-Relevance of Daily Activities, Possible Selves, Age, and Gender

Effect (*SE*)	Positive Affect	
	Hopes	Fears
Fixed effects estimates		
Within-person		
Possible self-related activities, β_{1j}	0.10 (0.04)	0.17 (0.05)
t (80)	2.57**	3.67***
Between-person		
Intercept, γ_{00}	2.98 (0.15)	3.03 (0.14)
t (76)	20.47***	21.95***
Possible selves concerning health, γ_{01}	−0.30 (0.15)	−0.22 (0.18)
t (76)	−2.01*	−1.22
Possible selves concerning social relations, γ_{02}	−0.02 (0.16)	−0.19 (0.17)
t (76)	−0.15	−1.12
Possible selves concerning everyday cognition, γ_{03}	0.03 (0.16)	−0.13 (0.15)
t (76)	0.20	−0.83
Age, γ_{04}	−0.03 (0.01)	−0.04 (0.01)
t (76)	−2.46*	−2.53*
Gender, γ_{05}	−0.22 (0.15)	−0.30 (0.16)
t (76)	−1.45	−1.90
Random effects estimates		
Variance of intercept (*SD*)	0.51 (0.72)***	0.52 (0.72)***
Variance of possible self-related activities (*SD*)	0.03 (0.16)**	0.03 (0.16)
Deviance reduction (Δ *df*)	12.14 (4)**	21.07 (4)***

Notes: HLMs = hierarchical linear models; the predictions are made by the use of restricted maximum likelihood estimation (hierarchical linear modeling). For gender, men = 0, women = 1; $N = 83$. There were 2,177 observations. Deviance reduction refers to adding the Level 2 predictor hopes reported (1; no hopes reported = 0) to the baseline model that included age and gender as Level 2 predictors. *SE* = standard error.

*$p < .05$, **$p < .01$, ***$p < .001$.

Next, we proceeded to the within-person level analyses. We employed HLM to regress the log odds of engaging in activities in a given domain on reports of hopes or fears in that domain, age, and gender (see Table 2). In the health domain, for example, the fixed effect of the intercept was –2.34, $SE = 0.17$, $p < .001$, which corresponds to a person who has not reported hopes in this domain, was 81 years old (mean age), and was a man. Using the formula 1/[1 + exp (–predicted log odds)], we find that this grand mean translates into a probability of .088 for having performed a health-related activity. The coefficients for the fixed effects of age and gender were not significantly different from zero, but the coefficient for hopes was (0.50, $SE = 0.23$, $p < .05$), suggesting a conditional probability of .137. We observed no statistically significant associations for cognitive activities. For social activities, however, we found significant associations with being a woman (0.56, $SE = 0.20$, $p < .01$; performance probability = .088; performance probability for men = .052) and hopes in the social domain (0.39, $SE = 0.20$, $p < .05$; performance probability = .075; performance probability for not having reported hopes = .052). The models explained 2.3% and 4.0% of the variance in health and social activities, respectively. The respective deviance reductions (3.83; 3.60) indicated a better model fit for the conditional than the unconditional models. Fears were not associated with engaging in more activities in a given domain (health, –0.06, $SE = 0.276$, $p > .10$; everyday cognition, 0.27, $SE = 0.27$, $p > .10$; social relations, 0.11, $SE = 0.22$, $p > .10$).

Enacting Hope-Related or Fear-Related Daily Activities and Indicators of Successful Aging

Next, we examined associations between enacting hope-related or fear-related activities on the one hand and self-reports of concurrent positive affect and subsequent 10-year mortality on the other hand. Specifically, we applied HLM to test whether engaging in activities that are related to hopes or fears was associated with elevations of positive affect. In addition, we explored whether enacting hope-related or fear-related daily activities was subsequently associated with differential mortality hazards over time.

Positive affect.—Results concerning positive affect are reported in Table 3 for hope-related and fear-related activities. At the within-person level, the coefficient for both hope-related activities (0.10, $SE = 0.04$, $p < .01$) and fear-related activities (0.17, $SE = 0.05$, $p < .01$) was positive and statistically significant. This indicates that being engaged in possible-self-related activities was indeed associated with an elevation of positive affect. At the between-person level, we found that in the models for hope-related activities, hopes in the health domain (–0.30, $SE = 0.15$, $p < .05$) as well as age (–0.03, $SE = 0.01$, $p < .05$) attenuated the level of positive affect (estimated intercept = 2.98, $SE = 0.15$, $p < .001$). We found no associations for reports of social hopes, cognitive hopes, and gender. In the models for fear-related activities, we found that age (–0.04, $SE = 0.01$, $p < .05$) was associated with lower positive affect (estimated intercept = 3.03, $SE = 0.14$, $p < .001$). We

found no associations with gender for fears and gender. Hopes and hope-related activities explained 3.9% of the variance in positive affect (deviance reduction = 12.14). Fears and fear-related activities explained 2.6% of the variance in positive affect (deviance reduction = 21.07). In sum, our results show that health-related hopes were associated with lower overall levels of positive affect, but engaging in hope-related activities and engaging in fear-related activities elevates positive affect.

Mortality.—To examine the effects of enacting hope-related or fear-related activities, we evaluated hierarchical Cox proportional hazards regression models (Cox, 1972) as implemented in the PHREG procedure from the SAS software package (1997) for differences in mortality risks over 10 years. Descriptively, 43 participants were deceased, 34 were still alive, and mortality information was missing for 6 participants who moved out of the Berlin area.

Hazard regression models showed that the adoption of hope-related activities in the three considered domains was associated with a lower relative risk (RR) of dying, $\chi^2(1, N = 77) = 4.4$, $p < .05$, RR = 0.97, and confidence interval or CI = 0.95–0.99. We also examined whether this association was spurious and simply reflected the effects of common determinants of mortality in very old age such as age, gender, intelligence, and physical functioning (balance).We controlled these variables in the first step of a hierarchical hazard regression model before we entered hope-related activities in a second step. The effect for hope-related activities remained uniquely significant, $\chi^2(1, N = 77) = 3.9$, $p < .05$, RR = 0.97, CI = 0.95–0.99, in addition to the effects of age, $\chi^2(1, N = 77) = 12.6$, $p < .001$, RR = 1.12, CI = 1.05–1.20; gender, $\chi^2(1, N = 77) = 2.7$, $p > .05$, RR = 0.58, CI = 0.30–1.11; intelligence, $\chi^2(1, N = 77) = 1.2$, $p > .05$, RR = 0.97, CI = 0.93–1.02; and balance, $\chi^2(1, N = 77) = 0.2$, $p > .05$, RR = 0.97, CI = 0.61–1.54. In contrast, fear-related activities were independent of mortality hazards, $\chi^2(1, N = 77) = 0.7$, $p > .10$, RR = 1.01, CI = 0.98–1.04, suggesting that hope-related activities and fear-related activities are differentially related to mortality.

Discussion

Using time-sampling information from 83 BASE participants, this study demonstrates that domain-specific possible selves translate into daily activities and are related with concurrent affective experiences and subsequent mortality hazards in old and very old age. Specifically, we showed that hopes in the domains of health and social relations are positively associated with the performance of health-related and social activities. Although participants with health-related hopes reported lower overall levels of positive affect, the performance of possible-self-related activities was associated with elevations in concurrent positive affect. Furthermore, our analyses linking possible-self-related activities in the time-sampling phase and subsequent mortality risks suggest that such microlevel processes may be associated with long-term outcomes of successful aging.

Our results indicate that hopes are associated with an engagement in domain-specific activities; however, this was not the case for fears. These findings parallel previous research on the differential role of hoped-for and feared possible selves. They suggest that older adults who reported hopes had elaborate images of what to do in the service of their desired future selves that helped them to actually perform domain-specific activities (Cross & Markus, 1994; Hooker, 1992; Hooker & Kaus, 1992; Markus & Ruvolo, 1989; Whaley, 2003).

In contrast, older adults who had reported feared possible selves may have felt trapped by vivid images of undesired situations and lacked the means and strategies to avoid them (Hooker, 1992; Hooker & Kaus, 1992). In addition, older adults may have perceived low control over feared outcomes, particularly in the domains of health and cognition (Hooker, 1992). This might apply less to the domain of social relations where a positive association between fears and activities was found at the between-person but not at the within-person level because older adults play an active role in shaping their networks even under losses (Carstensen, 1995; Lang, 2001). Alternatively, it may also be that older adults successfully avoided situations that were related to their feared selves (Carstensen, Mikels, & Mather, 2006).

Our findings revealed a positive association between hopes and daily activities in the domains of health and social relations but not in the cognitive domain. One reason for these differential associations might be that by the time individuals reach old age, they can draw on lifelong experience to help them decide how to stay in good health (e.g., engaging in physical activity or getting medical checkups; see Seiffge-Krenke, 2001) and keep satisfying relationships (e.g., calling friends, solving social conflicts; see Watson & Blanchard-Fields, 1998). In contrast, cognitive decline takes place gradually and usually does not constrain everyday functioning for a large part of the adult life span. Therefore, we speculate that older adults may have less experience with and knowledge of how to effectively implement their cognitive possible selves. Alternatively, older adults may be less able to influence cognitive processes by setting goals. Research by West and colleagues (e.g., West & Thorn, 2001) shows that memory goal setting increased self-efficacy in younger adults but not in older adults. This suggests that memory self-efficacy is not fueled by memory goals in old age. In a similar way, it might be the case that possible selves in the cognitive domain are unrelated to cognitive activities because participants did not believe in their success. However, the present data set does not allow an examination of this speculation. Finally, it is also possible that participants performed activities in the service of their cognitive possible selves that we did not classify as cognitive activities. Research by Hertzog and colleagues (Hertzog, McGuire, Powell-Moman, & York, 2001) supports this argument. In their study, older adults, among others, believed that they could control their memory by keeping a proper diet and engaging in physical exercise. In the present study the daily activities were not rated by participants themselves but represent a post hoc external coding. Neither of these categories was rated as relevant for cognitive functioning.

Another objective of this study was to investigate the link between the performance of possible self-related activities and outcomes of successful aging. In terms of affective experiences in daily life, our results are in line with previous findings on the positive relationship between the performance of goal-related activities and well-being (Brunstein, 1993; Cantor & Sanderson, 1999), but they also extend them in important ways.

First, they illustrate that this mechanism, primarily established with relatively young age groups (e.g., Carver & Scheier, 1990; Diener, Suh, Lucas, & Smith, 1999), is still intact in old and very old age. Second, the performance of possible self-related activities was associated with positive affect not only in high-functioning older adults but also in those participants who displayed relatively low overall levels of positive affect, as illustrated for participants who reported health-related hopes. This phenomenon points to the robustness of the motivational affect system in late life. Because we suspected that the negative relationship between health-related hopes and positive affect may be related to a third variable, namely functional health, we examined this association in the larger BASE sample. Results showed that constraints in functional health were associated with reports of health-related hopes. These results are in line with previous studies (e.g., Kunzmann, Little, & Smith, 2000) that showed that functional health modulates positive affect in older adults. Hence, the negative relationship between health-related hopes and positive affect may very well be due to the fact that both of them are related to health constraints. Alternatively, research by Hooker (1992) indicates that older adults spend a lot of time thinking about their health-related possible selves. Following her interpretation, we can speculate that rumination over poor health may be another factor that is related to low positive affect in the present sample (Hooker, 1992; Lyubomirsky & Nolen-Hoeksema, 1995).

One advantage of using microlongitudinal data from participants in a large-scale longitudinal study like the BASE is that we could link microlevel processes and long-term outcomes. As a follow-up, we investigated whether the extent to which participants engaged in possible-self related activities in daily life was related to survival. Our findings indicate that participants who performed few activities relating to their health, cognitive, and social hopes carried a higher mortality risk than those who performed many hope-related activities. However, we found no relationship between the performance of fear-related activities and mortality, which points to the differential role of hope-related as compared with fear-related processes. One possible interpretation for this finding could lie in the relative infrequency of fear-related activities: Despite the fact that working on fear-related activities was associated with elevations in positive affect, in the long run these few fear-related activities may not have made a difference with respect to health and survival. In addition, some may be realistic fears about inevitable declines. Even if participants worked on them very frequently, this may not have a strong impact on health and survival. This finding extends existing knowledge on the relationship between the performance of daily activities and mortality risk in very old age (e.g., Glass et al., 1999; Maier & Klumb, 2005; Lennartsson & Silverstein, 2001) by identifying hope-related processes as a specific mechanism related to late-life survival. One possible link may be that working on hopes enhances an individual's purpose in life and leads to better health (Ryff, 1995).

Strengths and Limitations

In this study, we used time-sampling information in order to capture life as it is lived. Online assessments of participants' activities and feelings have a high ecological validity and reduce the effects of memory biases in retrospective reports. However, they confront the researcher with a multitude of influences that are difficult to control. As a result, investigations based on time-sampling methods often explain only small amounts of variance (Bolger et al., 2003; Schwarz, 1999). In this study, assessments of possible selves and time-sampling information were separated by an average of 1 month. Ideally, possible selves would have been collected at the beginning of the time-sampling phase. We still assume that the possible selves were relevant during the time-sampling phase. From a theoretical point of view, possible selves operate at a high level of abstraction and do not change very quickly because they involve many lower level goals (Austin & Vancouver, 1996). Empirically, past research indicates relative instability of possible selves earlier in life in anticipation of important transitions (Kerpelman & Pittman, 2001), but research on possible selves in old age shows relatively high continuity (Frazier, Hooker, Johnson, & Kaus, 2000; Smith & Freund, 2002). Hence, despite the fact that possible selves are thought to be stable in late life, we do not know to what extent they may also be context driven and show day-to-day fluctuations. This should be addressed in future research. Analyses of the relationship between possible selves and the performance of domain-specific activities are based on post hoc ratings of activity contents. This has the advantage of minimizing reactivity because possible selves were not mentioned during the study. At the same time, it comes with the disadvantage that we do not know whether participants attributed the same meaning to their activities that we did when coding them. In addition, the content categories of possible selves and activities should be refined, particularly in relation to underlying temporal cycles, motivational orientations, and cognitive demand. For example, the current coding does not differentiate whether different activities, such as crossword puzzling and playing games, are equally cognitively demanding.

We acknowledge that this study represents a snapshot of daily life within a relatively small sample. The randomly sampled activities do not provide a complete picture of participants' daily life. A comparison between time-sampling data and information assessed with a continuous Yesterday-Interview procedure showed, however, that the two methods yielded largely equivalent results (Klumb & Baltes, 1999a). Our results indicate a close link between motivational and affective processes but do not allow causal inferences. For example, an older adult might feel good because he or she is performing a possible self-related activity, or he or she could perform possible self-related activities only when feeling good. The time intervals in between two consecutive beeps varied considerably in length and did not allow us to address lead–lag relationships. In the future, researchers may want to incorporate this question into the research design so that not only moment-to-moment but also day-to-day relationships can be examined.

Conclusions

The findings of the present study indicate that an investigation of possible self-activity linkages provides important insights into the operation of developmental processes in old age, and their association with microlevel (daily affect quality) and macrolevel (mortality risk) indicators of successful aging. From a methodological point of view, they underscore the usefulness of implementing measurement

bursts into longitudinal studies in order to relate everyday processes with long-term outcomes. Future research must substantiate these findings by investigating correlates and potential mechanisms, such as self-regulatory processes, social support, or the influence of matched hopes and fears (e.g., Dunkel & Kerpelman, 2006; Frazier et al., 2003; Oyserman, Gant, & Ager, 1995; Smith & Freund, 2002; Unemori, Omoregie, & Markus, 2004; West & Thorn, 2001), through which possible selves and daily activities are linked with positive affect and longer life.

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